CLAIMS

What is claimed is:

1. An apparatus for conditioning a polishing pad, comprising:

a supporting substrate including a conditioning surface; and

a plurality of abrasive elements adjacent at least said conditioning surface, said abrasive elements comprising a material that is degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of a polishing pad to be conditioned with said apparatus.

2. The apparatus of claim 1, wherein said abrasive elements have a dimension of from about 25 μm to about 500 μm.

3. The apparatus of claim 1, wherein said abrasive elements are secured to said conditioning surface.

4. The apparatus of claim 1, wherein said abrasive elements comprise abrasive particles at least partially embedded in said supporting substrate.

5. The apparatus of claim 4, wherein said abrasive particles are at least partially embedded in said conditioning surface.

6. The apparatus of claim 5, further including abrasive elements that are completely embedded within said supporting substrate.

7. The apparatus of claim 4, wherein said supporting substrate comprises at least one of a polymer, a metal, a ceramic, paper, a paper-like compound, a textile, a mat of material, and a mesh of material.

8. The apparatus of claim 1, wherein at least some of said abrasive elements are located beneath said conditioning surface.

9. The apparatus of claim 1, wherein said supporting substrate is substantially rigid.

10. The apparatus of claim 9, wherein said supporting substrate comprises at least one of a polymer, a metal, and a ceramic.

11. The apparatus of claim 1, wherein said supporting substrate is pliable.

12. The apparatus of claim 11, wherein said supporting substrate comprises at least one of paper, a paper-like compound, textile, a mat of material, and a mesh of material.

13. The apparatus of claim 1, wherein said supporting substrate is secured to a rigid support.

14. The apparatus of claim 1, wherein said abrasive elements comprise filaments.

15. The apparatus of claim 1, wherein said abrasive elements protrude from and are continuous with said conditioning surface.

16. The apparatus of claim 1, wherein said abrasive elements and said supporting substrate comprise the same material.

17. The apparatus of claim 15, wherein said abrasive elements and at least said conditioning surface of said supporting substrate comprise said material that is degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of a polishing pad to be conditioned with said apparatus.

18. The apparatus of claim 17, wherein said material comprises at least one of silicon dioxide, iron, an iron alloy, copper, nickel, and tungsten.

19. The apparatus of claim 1, wherein said at least one chemical comprises at least one of hydrofluoric acid, sodium hydroxide, potassium hydroxide, and hydrochloric acid.

20. A method for conditioning a polishing pad, comprising:
providing a polishing pad including a polishing surface;
abrading at least a portion of said polishing surface with a conditioner including an abrasive material that is etchable selectively with respect to a material of said polishing pad; and
exposing at least said portion of said polishing surface to at least one chemical to remove particles of said abrasive material from said portion without substantially degrading or dissolving said material of said polishing pad.

21. The method of claim 20, wherein said abrading comprises abrading at least said portion of said polishing surface with said conditioner comprising an abrasive material including silicon dioxide.

22. The method of claim 21, wherein said abrading comprises abrading at least said portion of said polishing surface with said abrasive material being in the form of at least one of a particle and a structure protruding from a conditioning surface of said conditioner.

23. The method of claim 21, wherein said exposing comprises exposing at least said portion of said polishing surface to at least one chemical comprising at least one of hydrofluoric acid, sodium hydroxide, and potassium hydroxide.

24. The method of claim 20, wherein said abrading comprises abrading at least said portion of said polishing surface with said conditioner comprising an abrasive material including at least one of iron, an iron alloy, copper, nickel, and tungsten.

25. The method of claim 24, wherein said abrading comprises abrading at least said portion of said polishing surface with said abrasive material being in the form of at least one of a filament, a particle, and a structure protruding from a conditioning surface of said conditioner.

26. The method of claim 24, wherein said exposing comprises exposing at least said portion of said polishing surface to at least one chemical comprising hydrochloric acid.

27. The method of claim 20, further comprising wearing away a conditioning surface of said conditioner to expose abrasive material.

28. The method of claim 27, wherein said wearing away is effected by contact of abrasive material that is released from said conditioner.

29. The method of claim 20, wherein said abrading is effected separate from polishing equipment.

30. The method of claim 20, further comprising sonicating at least said at least one chemical as said polishing pad is exposed to said at least one chemical.

31. A system for conditioning a polishing pad, comprising:

a polishing pad support;

a conditioner including:

a supporting substrate including a conditioning surface; and

a plurality of abrasive elements adjacent said conditioning surface, said abrasive elements comprising a material that is degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of a polishing pad to be conditioned with said plurality of abrasive elements,

said conditioner being positionable over said polishing pad support so as to place said conditioning surface in contact with a polishing pad disposed on said polishing pad support; and

at least one movement component configured to move at least one of said polishing pad support and said conditioner laterally relative to the other of said polishing pad support and said conditioner.

32. The system of claim 31, wherein said at least one movement component is configured to rotate one of said polishing pad support and said conditioner.

33. The system of claim 31, wherein said at least one movement component is configured to laterally vibrate one of said polishing pad support and said conditioner.

34. The system of claim 31, wherein said at least one movement component is configured to move one of said polishing pad support and said conditioner substantially linearly relative to the other of said polishing pad support and said conditioner.

35. The system of claim 31, wherein said plurality of abrasive elements of said conditioner have a dimension of from about 25 μm to about 500 μm.

36. The system of claim 31, wherein said plurality of abrasive elements of said conditioner are secured to said conditioning surface thereof.

37. The system of claim 31, wherein said plurality of abrasive elements of said conditioner comprise abrasive particles at least partially embedded within said supporting substrate of said conditioner.

38. The system of claim 37, wherein said abrasive particles are at least partially embedded in said conditioning surface.

39. The system of claim 38, further including abrasive particles that are completely embedded within said supporting substrate.

40. The system of claim 37, wherein said supporting substrate of said conditioner comprises at least one of a polymer, a metal, a ceramic, paper, a paper-like compound, and a fabric.

41. The system of claim 31, wherein said abrasive elements of said conditioner are located beneath said conditioning surface thereof.

42. The system of claim 31, wherein said supporting substrate of said conditioner is substantially rigid.

43. The system of claim 42, wherein said supporting substrate of said conditioner comprises at least one of a polymer, a metal, and a ceramic.

44. The system of claim 31, wherein said supporting substrate of said conditioner is pliable.

45. The system of claim 44, wherein said supporting substrate comprises at least one of paper, a paper-like compound, and fabric.

46. The system of claim 31, wherein said plurality of abrasive elements of said conditioner comprise filaments.

47. The system of claim 31, wherein said plurality of abrasive elements of said conditioner protrude from and are continuous with said conditioning surface thereof.

48. The system of claim 31, wherein said plurality of abrasive elements and said supporting substrate of said conditioner comprise the same material.

49. The system of claim 47, wherein said abrasive elements of said conditioner and at least said conditioning surface of said supporting substrate of said conditioner comprise said material that is degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of a polishing pad to be conditioned with said apparatus.

50. The apparatus of claim 49, wherein said material comprises at least one of silicon dioxide, iron, an iron alloy, copper, nickel, and tungsten.

51. The apparatus of claim 31, wherein said at least one chemical comprises at least one of hydrofluoric acid, sodium hydroxide, potassium hydroxide, and hydrochloric acid.

52. A method for fabricating an apparatus for conditioning a polishing pad, comprising:
providing a quantity of an abrasive material that is degradable or dissolvable by at least one chemical that does not substantially degrade or dissolve a material of a polishing pad to be conditioned with the apparatus; and
forming a conditioning surface from said quantity of abrasive material, said conditioning surface including a plurality of abrasive elements.

53. The method of claim 52, comprising providing a supporting substrate.

54. The method of claim 53, wherein said providing said supporting substrate comprises providing at least one of a polymer, a metal, a ceramic, paper, a paper-like material, or a fabric.

55. The method of claim 53, wherein said providing said quantity of said abrasive material comprises providing abrasive particles.

56. The method of claim 55, wherein said providing abrasive particles comprises providing abrasive particles having a dimension of about 25 μm to about 500 μm.

57. The method of claim 55, wherein said providing abrasive particles comprises at least partially impregnating said supporting substrate with said abrasive particles.

58. The method of claim 57, wherein said at least partially impregnating comprises disposing at least some of said abrasive particles adjacent said conditioning surface.

59. The method of claim 55, wherein said providing abrasive particles comprises completely embedding at least some of said abrasive particles within said supporting substrate.

60. The method of claim 55, wherein said forming said conditioning surface comprises securing at least some of said abrasive particles to a surface of said supporting substrate.

61. The method of claim 52, comprising forming a supporting substrate from said quantity of abrasive material.

62. The method of claim 52, wherein said providing said quantity of abrasive material comprises forming a layer of said abrasive material on a supporting substrate.

63. The method of claim 52, wherein said forming said conditioning surface comprises patterning said abrasive material.

64. The method of claim 63, wherein said patterning said abrasive material comprises: forming a mask including apertures therethrough over said abrasive material; and contacting regions of said abrasive material exposed through said mask to an etchant to at least partially remove said regions through said mask.

65. The method of claim 52, wherein said providing said quantity of said abrasive material comprises providing a quantity of at least one of silicon dioxide, iron, an iron alloy, copper, nickel, and tungsten.